D. Faucett
#28
12-19-02

[10191/857]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	Examiner: Ta Hsung Tung
Gerhard SCHNEIDER et al.	
For: PLANAR SENSOR ELEMENT	
Filed: October 21, 1998	Art Unit 1743
Serial No.: 09/176,124	

Commissioner for Patents
Washington, DC 20231

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on

Date: Dec. 9, 2002 Reg. No. ~~22,490~~

Signature: Kathleen Edmund
~~Richard L. Mayer~~

APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

Appellants filed a Notice of Appeal dated October 2, 2002, appealing from the Final Office Action dated June 4, 2002, finally rejecting claims 1 and 3 to 7 of the above-identified application ("the present application"). This Appeal Brief is submitted in triplicate by Appellants in support of their appeal. For the reasons more fully set forth below, the final rejections of claims 1 and 3 to 7 should be reversed.

I. REAL PARTY IN INTEREST

The above-identified Applicants and Robert Bosch GmbH of Stuttgart in the Federal Republic of Germany, are the real

parties in interest. Robert Bosch GmbH is the assignee of the entire right, title and interest in the present application.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences "which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal."

III. STATUS OF CLAIMS

Claims 1 and 3 to 5 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,505,806 ("Yamada '806").

Claims 1 and 3 to 5 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,505,807 ("Yamada '807").

Claims 1 and 3 to 7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,529,677 ("Schneider") in view of either Yamada '806 or Yamada '807.

A copy of the appealed claims is attached hereto in the Appendix.

IV. STATUS OF AMENDMENTS

In response to the Final Office Action issued on June 4, 2002, a Reply Under 37 C.F.R. § 1.116 was filed on August 8, 2002.

V. SUMMARY OF THE INVENTION

The present invention relates to a planar sensor element for determining gas components, which includes a layer structure with a heating element integrated therein with a layer-shaped heating conductor. The heating conductor is arranged in a layer plane of the layer structure so that an at least approximately homogeneous distribution of the heating power of the heating element over the cross-section of the layer structure is obtained. Abstract. In this manner, the sensor element may

be more resistant to temperature variations and thermal shock, and the efficiency of the sensor element may be enhanced.

The covering layer structure may, for example, be made of a single foil having an unsintered thickness of 0.6 to 1 mm, for example, 0.8 mm, whereas the functional layer structure adjacent to the resistance heating element on the opposite side has a total thickness approximately equal to that of the covering layer structure. Specification, page 2, lines 5 to 15.

Referring to the Figure, there is seen a cross section of an exemplary planar sensor element 10 according to the present invention. Sensor element 10 includes a plurality of layers arranged one on top of the other in a layer structure, which, when unsintered (green), may, for example, be formed from oxygen ion-conducting solid electrolyte foils. Specification, page 3, lines 1 to 5.

The layer structure of sensor element 10 includes an electrochemical measuring cell 12 and a heating element 14. Measuring cell 12 includes a first foil 16, a measuring electrode 22 arranged on a measuring-gas side surface of the first foil 16, a reference electrode arranged on a reference channel surface side of the first foil 16, a second foil 18, a reference channel 20 integrated into the second foil 18, and a cover layer 26 covering the first measuring electrode 22. Specification, page 3, lines 9 to 16.

Heating element 14 includes a heating conductor 30 embedded between two insulating layers 28 and 29, an external covering foil 32 following first insulation layer 29, and a sealing frame 34 positioned around the two insulating layers 28 and 29. Specification, page 3, lines 18 to 26.

The heating conductor 30 of the heating element 14 is arranged within a layer plane 36, which is centered with respect to the layer structures above and below the heating conductor 30. In this manner, the thickness of first and second foils 16, 18 of the measuring cell 12 (considering the thickness of cover layer 26) is approximately the same thickness as the cover foil 32. Specification, page 3, line 28 to page 4, line 3. The first and second foils 16, 18 may have different thicknesses, so long as

the total thickness of the function layer structure of the sensor element 10 is at least approximately equal to the thickness of cover foil 32 (or a cover foil-side layer structure used instead of cover foil 32). Specification, page 4, lines 5 to 11. In this manner, the sensor element may be more resistant to temperature variations and thermal shock, and the efficiency of the sensor element may be enhanced.

VI. ISSUES FOR REVIEW

The following issues are presented for review on appeal in this case:

A) Whether claims 1 and 3 to 5 are anticipated by Yamada '806 or Yamada '807.

B) Whether claims 1 and 3 to 7 are unpatentable over Schneider in view of either Yamada '806 or Yamada '807.

VII. GROUPING OF CLAIMS

Group 1: Claims 1, 6 and 7 stand or fall together.

Group 2: Claims 3 and 4 stand or fall together.

Group 3: Claim 5 stands alone.

VIII. ARGUMENTS

A. Rejections of claims 1 and 3 to 5 under 35 U.S.C. § 102(b)

Claims 1 and 3 to 5 stand rejected under 35 U.S.C. § 102(b) as anticipated by Yamada '806 or Yamada '807. Appellants respectfully submit that neither Yamada '806 nor Yamada '807 anticipates claim 1 and 3 to 5 for the following reasons.

Claim 1 relates to a planar sensor element for determining at least one gas component and recites that the planar sensor element includes a layer structure. Claim 1 further recites that the layer structures includes: a measuring cell layer having at least one surface; a covering layer; a heating element disposed between the measuring cell layer and the covering layer and generating a heating power, a layer-shaped heating conductor being embedded in the heating element; and at

least one electrode, each electrode arranged on a respective surface of the measuring cell layer. In addition, claim 1 recites that the layer-shaped heating conductor is arranged in a layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure and that the layer plane is centered with respect to the sensor element.

Yamada '806 purportedly relates to an oxygen sensor including a plate-like oxygen pump element having electrodes disposed in parallel alignment. See Abstract. Referring to Figures 7 and 8 of Yamada '806, there is seen an embodiment of an oxygen sensor including an intermediate board layer 7 sandwiched between an oxygen pump cell 1 and an oxygen concentration cell 4, each of which includes a single electrolyte layer. Col. 3, lines 28 to 56 and col. 6, lines 30 to 36. The intermediate board layer 7 includes board member layers 7a and 7b, with a heat generating resistor 16a arranged on the surface of board member 7b. Col. 6, lines 42 to 45. In this manner, the temperature of the oxygen sensor purportedly may be increased by applying a heating current to the heat generating resistor 16a via lead wires 10'. It should be noted that the oxygen pump cell 1 and the oxygen concentration cell 4 are functional cells, which include respective functional electrodes 3a and 6a for measuring and pumping oxygen, respectively. Col. 3, lines 40 to 61; Figure 1.

Yamada '807 purportedly relates to an oxygen sensor including a heater element and an insulation board disposed between a oxygen pump cell and an oxygen concentration cell. See Abstract. Referring to Figures 1 through 3 of Yamada '807, there is seen an oxygen sensor including an oxygen concentration cell 1 and an oxygen pump element 2 (each of which includes a single electrolyte layer), between which a heater element 3 is disposed. Col. 3, lines 23 to 26. Each of the cells 1, 2 includes a respective pair of electrodes 9, 10 and 11, 12 for measuring and pumping oxygen, respectively. An insulating coating 6 is asymmetrically applied to the surface of an insulating plate of

the heater element 3 to purportedly insulate a heat generating resistor 13 arranged on the heater element 3. Col. 5, lines 37 to 41; Figure 2.

It is respectfully submitted that neither Yamada '806 nor Yamada '807 discloses, or even suggests, "a covering layer" as recited in independent claim 1. As described above, both Yamada '806 and Yamada '807 disclose functional cell layers (measuring and pumping), as well as intermediate layers disposed between these functional layers. In contrast, the "covering layer" of claim 1 is not a functional layer but rather acts to help ensure that the heating power is homogeneously distributed over the cross-section of the sensor element.

Nevertheless, in the Advisory Action dated August 29, 2002, the Examiner contends that either of the functional layers of Yamada '806 or Yamada '807 can be considered a covering layer, since "[t]here is simply no language in [Appellants'] claims to exclude the top or the bottom layer of either [Yamada '806 or Yamada '807] from being a 'covering layer'." Advisory Action, page 2. However, it is believed that the Examiner's interpretation of "covering layer," as this term is recited in claim 1, is unreasonable.

Although limitations may not be imported from the Specification into the claims, proper claim interpretation mandates that the Examiner give the claims their broadest reasonable interpretation in light of the Specification. In re Pratter, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969). However, it is respectfully submitted that the Examiner is unreasonably equating the functional cells of Yamada '806 and Yamada '807 with the "covering layer" of claim 1. Since the oxygen pumping cells and oxygen concentration cells of Yamada '806 and Yamada '807 include various components for measuring and pumping oxygen, these cells are simply not operable as covering layers but rather act to perform specific functions necessary for proper operation of the oxygen sensor. In sharp contrast, the "covering layer" of claim 1 performs no specific function for proper sensor operation but rather acts to "cover" the oxygen sensor to help ensure that the heating power is

homogeneously distributed over the cross-section of the sensor element. Thus, neither the oxygen pumping cells nor the oxygen concentration cells of Yamada '806 and Yamada '807 may reasonably be considered "covering layers" as recited in claim 1.

Further regarding independent claim 1, neither Yamada '806 nor Yamada '807 discloses, or even suggests, any feature operable to "obtain an at least approximately homogeneous distribution of [a] heating power over a cross-section of [a] sensor element perpendicular to the layer structure" as recited in claim 1. Yamada '806 does not even discuss such a feature, whereas Yamada '807 is concerned only with efficient heat distribution, not homogenous heat distribution. Yamada '807, col. 9, lines 25 to 33. It is respectfully submitted that the insulating coating 6 of Yamada '807 necessarily acts to prevent a homogeneous heat distribution, since the insulating coating 6 is applied asymmetrically with respect to the oxygen sensor.

Nonetheless, the Examiner alleges that "[t]he insulating [coating 6] is apparently electrically-insulating, not thermally-insulating, and therefore should not affect the homogeneous distribution of heat." Final Office Action, June 4, 2002, page 2. In this manner, the Examiner appears to be relying on the doctrine of inherency by asserting that the coating 6 of Yamada '807 necessarily does not affect the homogeneous distribution of heat, since Yamada '807 simply does not discuss the heat dissipative characteristics of the coating 6. However, the Examiner's assertions are clearly erroneous, since it is entirely conceivable that the insulating coating 6 of Yamada '807 may affect the homogeneous distribution of heat, especially since the insulating coating 6 is made of materials different than those used in the oxygen concentration and pumping cells, and since there is no indication in Yamada '807 to suggest otherwise. Accordingly, it cannot be said that the coating 6 necessarily does not affect the homogeneous distribution of heat and, as such, it cannot be said that Yamada '807 inherently discloses such a feature.

Still further regarding independent claim 1, it is respectfully submitted that neither Yamada '806 nor Yamada '807

discloses, or even suggests, a "layer-shaped heating conductor . . . arranged in a layer plane . . . centered with respect to the sensor element" as recited in claim 1. Put simply, the disclosures of Yamada '806 and Yamada '807 state absolutely nothing whatsoever concerning the relative placement of a heating element with respect to an oxygen sensor, much less whether the heating element is arranged within a centered layer plane.

For the foregoing reasons, it is respectfully submitted that neither Yamada '806 nor Yamada '807 anticipates claim 1 or claims 3 to 5, which ultimately depend from claim 1. On this basis alone, the anticipation rejections of claims 1 and 3 to 5 must necessarily fail. Nonetheless, Appellants present the following additional arguments in support of the reversal of the anticipation rejections of claims 1 and 3 to 5.

Further regarding dependent claim 3, as well as claim 4, which depends from claim 3, it is respectfully submitted that neither Yamada '806 nor Yamada '807 discloses, or even suggests, the additional features of these claims. For example, neither of these references discloses that "the measuring cell layer includes at least two measuring cell layer foils," as recited in claim 3. As described above, both Yamada '806 and Yamada '807 disclose respective oxygen concentration and oxygen pumping cells. However, as disclosed in both references, each of these cells include a single electrolyte layer.

Further regarding dependent claim 5, it is respectfully submitted that neither Yamada '806 nor Yamada '807 discloses, or even suggests, the added features of this claim, which include "a plurality of electrically insulating layers, a first thickness of one of the electrically insulating layers being approximately equal to a second thickness of another one of the electrically insulating layers, and wherein the heating conductor is embedded in the electrically insulating layers, the electrically insulating layers being formed on both sides of the heating conductor." Specifically, Yamada '806 discloses absolutely no insulating layer(s) whatsoever, and Yamada '807 discloses only a single asymmetrically arranged insulating coating 6 (i.e., not a plurality of layers) arranged on the surface of the heating

element 3, thereby precluding the heating element 3 from being "embedded" within the insulating coating 6, as recited within the context of claim 5.

For at least the foregoing reasons, it is respectfully submitted that claims 1 and 3 to 5 are allowable over Yamada '806 and Yamada '807. Accordingly, it is respectfully submitted that the rejections of claims 1 and 3 to 5 under 35 U.S.C. § 102(b) should be reversed.

B. Rejections of claims 1 and 3 to 7 under 35 U.S.C. § 103(a)

Claims 1 and 3 to 7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Schneider in view of either Yamada '806 or Yamada '807. Appellants respectfully request reversal of these rejections for the following reasons.

Schneider purports to relate to a planar polarographic sensor for determining the lambda value of gas mixtures. Three embodiments are described by Schneider, each of which includes a heating unit C having a heater 27. In none of the three embodiments is the heater 27 arranged between the measuring cell layer and the covering layer to obtain at least an approximately homogeneous distribution of heating power over a cross-section of the sensor element perpendicular to the layer structure as recited in claim 1. Furthermore, as admitted in the Office Action dated January 2, 2002, Schneider does not disclose that the layer plane is centered with respect to the sensor element as recited in claim 1. In this manner, as described on page 1, lines 25 to 29 of the Specification, it is believed that "the highly asymmetrical arrangement of the heating element [described by Schneider] with respect to the layer sequence of the layer structure [causes] the cover foil [to heat up] much more than the layer structure provided with function layers."

As indicated above, neither Yamada '806 nor Yamada '807 discloses, or even suggests, the arrangement of the heating element as recited in claim 1 and, as such, simply does not cure the critical deficiencies of Schneider as applied to claim 1.

Nonetheless, the Examiner contends that Schneider "discloses [Appellants'] basic sensor element," except for the heating conductor located in a layer plane, in which "the layer plane is centered with respect to the sensor element." Office Action, January 2, 2002. The Examiner also contends that "[it] is common knowledge that electrolyte measurement is temperature-sensitive [and that] it is fundamental physics that significant temperature gradient between different portions of one element can cause cracking from thermal stress." Office Action, January 2, 2002, page 3. From this, the Examiner concludes that "[i]t would have been obvious for [Schneider] to locate his heating conductor in a centered plane as shown by either [Yamada '806 nor Yamada '807], because such a location would permit even heat distribution between the top and the bottom of the sensor element," since a "[t]emperature gradient within a sensor element may cause inaccurate measurement as well as cause thermal shock damage." Office Action, January 2, 2002, page 3.

The Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

As an initial matter, Appellants do not admit that it is common knowledge that electrolyte measurement is temperature-sensitive or that fundamental physics necessarily dictates that a significant temperature gradient between different portions of one element can cause cracking from thermal stress. As such,

Appellants respectfully traverse these contentions. In this regard, Appellants requested that the Examiner provide specific evidence to establish these assertions and/or contentions by providing an affidavit and/or published information concerning these assertions. Reply Under 37 C.F.R. § 1.116, August 8, 2002, pages 8 to 9. This, however, the Examiner has failed to provide.

Moreover, whether it is common knowledge that electrolyte measurement is temperature-sensitive or that fundamental physics dictates that a significant temperature gradient can cause cracking -- which Appellants do not admit -- does not, in and of itself, create the motivation required to combine Schneider with either Yamada '806 or Yamada '807. Essentially, the foregoing unsupported assertions establish only that the cause of a possible problem with electrolytic temperature measurement devices may be known. However, just because a possible problem and its cause may be well known does not necessarily mean that a proposed solution, no matter how technologically simple it may appear, is also well known. In other words, the inquiry is not whether the cause of a problem may be obvious, but rather whether the proposed solution, taken as a whole within the context of the claim under examination, would have been obvious to the ordinary artisan.

As indicated in Appellants' Specification, placing the heating conductor in a layer plane "centered with respect to the sensor element" is advantageous in that the heating power is homogeneously distributed over the cross-section of the sensor element. Thus, a resistance of the sensor element to temperature variations and thermal shock is improved. In contrast, none of the references cited in any of the Office Actions to date discloses, teaches, or suggests placing the heating conductor in a layer plane and, as such, none of these references discloses, teaches, or suggests that centering the heating conductor produces any advantages whatsoever.

The Office Action dated January 2, 2002 states that "[t]emperature gradient within a sensor element may cause inaccurate measurement as well as cause thermal shock." Office Action, January 2, 2002 at p. 3. The Office Action dated

January 2, 2002 provides no support for this assertion. The Specification, however, states at page 2, lines 1 to 2 that "a resistance of the sensor element [according to the present invention] to temperature variations and thermal shock is improved." In response to Appellants' arguments that the obviousness rejection is improperly based on Appellants' own Specification, the Final Office Action states that "Applicants may not preempt an examiner's reliance upon common scientific principles as motivation for combining references by listing these principles in his specification" and that "[o]therwise, an applicant can merely set forth in his disclosure all possible reasons including well-known axioms for combining references and thus preclude any manner of combining references to reject a claim." Final Office Action, June 4, 2002, page 3.

In view of the foregoing, it is respectfully submitted that the present rejection is plainly based in improper hindsight. As stated by the Federal Circuit:

> Measuring a claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. . . . Close adherence to this methodology is especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher."

In re Dembiczak, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). That the Examiner is using "that which only the inventor[s] taught . . . against its teacher" is apparent from the failure to date to provide any support, outside of the Appellants' own Specification, for the alleged suggestion to combined Schneider and either Yamada '806 or Yamada '807. Indeed, "[c]ombining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as

a blueprint for piecing together the prior art to defeat patentability -- the essence of hindsight." Id.

The Federal Circuit in the case of In re Zurko has made plain that reliance on general conclusions of what is "basic knowledge" or "common sense" cannot remedy the deficiencies of cited references, stating that:

> [t]he deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is "basic knowledge" or "common sense" to one of ordinary skill in the art. . . . We cannot accept these findings [of alleged "basic knowledge" and "good common sense"] by the Board. This assessment of basic knowledge and common sense was not based on any evidence in the record and, therefore, lacks substantial evidence support. . . . With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or experience -- or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record to support these findings.

In re Zurko, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

The Federal Circuit further stated in the case of In re Lee that "'[c]ommon knowledge and common sense,' even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority." In re Lee, 61 U.S.P.Q.2d 1430, 1435 (Fed. Cir. 2002). The Federal Circuit further stated that:

> The determination of patentability on the ground of unobviousness is ultimately one of judgment. In furtherance of the judgmental process, the patent examination procedure serves both to find, and to place on the official record, that which has been considered with respect to patentability. The patent examiner and the Board are deemed to have experience in the field of the invention; however, this experience, insofar as applied to the determination of patentability, must be applied from the viewpoint of "the person having ordinary skill in the art to which said subject matter pertains," the words of section 103. In finding the relevant facts, in assessing the significance of the prior art, and in making the ultimate determination of the issue of

> obviousness, the examiner and the Board are presumed to act from this viewpoint. Thus when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record. The failure to do so is not consistent with either effective administrative procedure or effective judicial review. The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies.

In re Lee, supra, 61 U.S.P.Q.2d at 1435.

Furthermore, the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the generalized assertions of the Examiner that it would have been obvious to modify or combine the references, do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Examiner's assertions reflect a subjective "obvious to try" standard, and therefore do not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the

> references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence)** that one of ordinary skill . . . **would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the Examiner offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Further, "[b]road conclusory statements regarding the teaching or multiple references, standing alone, are not 'evidence.'" In re Dembiczak, 50 U.S.P.Q.2d at 1617. Accordingly, the Examiner must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

The Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" -- which is not the case here -- there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed," stating that:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But,

> there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings.

It is therefore respectfully submitted that the unsupported assertions that "[i]t is common knowledge that electrolytic measurement is temperature-sensitive" and that "it is fundamental physics that significant temperature gradient between different portions of one element can cause cracking from thermal stress" do not provide the suggestion or motivation to make the proposed combination of Schneider and Yamada '806 or Yamada '807.

For the foregoing reasons, it is respectfully submitted that the combination of Schneider with either Yamada '806 or Yamada '807 does not render obvious the subject matter of claim 1, from which claims 3 to 7 ultimately depend. On this basis alone, the obviousness rejections of claims 1 and 3 to 7 must necessarily fail. Nonetheless, Appellants present the following additional arguments in support of the reversal of the obviousness rejections of claims 1 and 3 to 7.

Further regarding dependent claim 3, as well as dependent claim 4 which depends from claim 3, it is respectfully submitted that the combination of Schneider with either Yamada '806 or Yamada '807 does not disclose, or even suggest, that "the measuring cell layer includes at least two measuring cell layer foils," as recited in this claim. As described above, both Yamada '806 and Yamada '807 disclose respective oxygen concentration and oxygen pumping cells, each of which includes a single electrolyte layer. Furthermore, any reading of Schneider

makes clear that this reference fails to cure the critical deficiencies of Yamada '806 and Yamada '807 as applied against claim 3.

Nevertheless, the Examiner contends that Appellants' alleged failure to address this feature in the communication dated April 10, 2002, "is taken to mean that the language [of claim 3] includes the situation wherein only one layer is present in each of the measuring cell layer and the covering layer." Final Office Action, June 4, 2002, page 3. However, Appellants note that this assertion is completely unfounded and has absolutely no basis in law or United States Patent and Trademark Office procedure. Applicants may, for example, argue for the allowability of a dependent claim by arguing only that the prior art fails to disclose features of the independent claim. In this manner, Applicants satisfy their burden under 37 C.F.R. § 1.111, without acquiescing to individual arguments asserted against the added features of the dependent claims.

Further regarding dependent claim 5, it is respectfully submitted that the combination of Schneider with either Yamada '806 or Yamada '807 does not disclose, or even suggest, "a plurality of electrically insulating layers, a first thickness of one of the electrically insulating layers being approximately equal to a second thickness of another one of the electrically insulating layers, and wherein the heating conductor is embedded in the electrically insulating layers, the electrically insulating layers being formed on both sides of the heating conductor." As described above, Yamada '806 discloses absolutely no insulating layer(s) whatsoever, and Yamada '807 discloses only a single asymmetrically arranged insulating coating 6 (i.e., not a plurality of layers) arranged on the surface of the heating element 3, thereby precluding the heating element 3 from being "embedded" within the insulating coating 6, as recited within the context of claim 5. Furthermore, any reading of Schneider makes clear that this reference fails to cure the critical deficiencies of Yamada '806 and Yamada '807 as applied against claim 5.

For at least the foregoing reasons, it is respectfully submitted that the combination of Schneider with either Yamada '806 or Yamada '807 does not render obvious the subject matter of claims 1 and 3 to 7. Accordingly, it is respectfully requested that the rejections of these claims under 35 U.S.C. § 103(a) be reversed.

IX. CONCLUSION

For the foregoing reasons, it is respectfully submitted that the final rejection of claims 1 and 3 to 7 should be reversed.

Respectfully submitted,

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By: Reg No 35,952

Dated: Dec. 9, 2002 By:

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26646
PATENT TRADEMARK OFFICE

APPENDIX

1. A planar sensor element for determining at least one gas component, comprising:

a layer structure including:

a measuring cell layer having at least one surface;

a covering layer;

a heating element disposed between the measuring cell layer and the covering layer and generating a heating power, a layer-shaped heating conductor being embedded in the heating element; and

at least one electrode, each electrode arranged on a respective surface of the measuring cell layer;

wherein the layer-shaped heating conductor is arranged in a layer plane of the layer structure to obtain an at least approximately homogeneous distribution of the heating power over a cross-section of the sensor element perpendicular to the layer structure; and

wherein the layer plane is centered with respect to the sensor element.

3. The planar sensor element according to claim 1,

wherein the planar sensor element is formed using a sintering process,

wherein, before the layer structure is sintered, the measuring cell layer includes at least two measuring cell layer foils and the covering layer includes at least one covering layer foil, the covering layer foil having a predetermined thickness, and

wherein a total thickness of the at least two measuring cell layer foils is at least approximately equal to the predetermined thickness.

4. The planar sensor element according to claim 3, wherein the layer structure includes a further layer having a further thickness, and wherein the total thickness includes the further thickness.

5. The planar sensor element according to claim 1, wherein the layer structure further includes a plurality of electrically insulating layers, a first thickness of one of the electrically insulating layers being approximately equal to a second thickness of another one of the electrically insulating layers, and wherein the heating conductor is embedded in the electrically insulating layers, the electrically insulating layers being formed on both sides of the heating conductor.

6. The planar sensor element according to claim 5, wherein the layer structure further includes a sealing frame surrounding the electrically insulating layers, the sealing frame having a frame thickness which is equal to a thickness of the electrically insulating layers.

7. The planar sensor element according to claim 6, wherein the electrically insulating layers include two electrically insulating layers.